

REMARKS

Claims 1-29, 33 and 34 are pending and subject to restriction and/or election requirement. Applicants have canceled claims 1-18 and 33 without prejudice or disclaimer to the subject matter claimed therein. Claims 19, 23-25 and 34 have been amended. New claims 35-41 have been added.

Applicants respectfully submit that support for the amendment to claims 19, 24 and 34 can be found in the specification as originally filed at, for example, page 26, lines 3-5. Support for the amendment to claims 23 and 25 can be found in the original specification at, for example, page 5, line 29 through page 6, line 8. Applicants respectfully submit that support for the new claims can be found, for example, at page 26, lines 7-17, and page 27, lines 1-30.

The Action acknowledged applicants' election without traverse of claims 1-29, 33 and 34 in the previous response. The Action, however, required that the claims be further restricted, pursuant to 35 U.S.C. §121, to one of the following invention groups:

I. Claims 1-18 and 33, drawn to a method for making a silicon carbide composite material, classified in class 156, subclass 275.5.

II. Claims 19-29 and 34, drawn to a method for making a unitary composite body using a key and keyway, classified in class 156, subclass 92.

During a telephone conversation with Examiner Jerry Lorengo on March 29, 2004, applicants provisionally elected with traverse to prosecute the invention of Group II, directed to claims 19-29 and 34. Thus, claims 1-18 and 33 have been withdrawn from consideration. Applicants now hereby confirm this election. Accordingly, applicants have cancelled claims 1-18 and 33 in the present application without prejudice or disclaimer to the subject matter claimed therein, but reserve the right to pursue these claims in a Divisional application.

Claim Rejections - 35 USC §103

Claims 19, 20 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,310,434 to Vives et al. (hereinafter referred to as "Vives") in view of U.S. Patent No. 5,840,221 to Lau et al. (hereinafter referred to as "Lau"). Applicants respectfully traverse this rejection.

Applicants respectfully submit that neither Vives nor Lau, whether taken alone or in combination, discloses or suggests the claimed invention. Specifically, neither Vives nor Lau discloses or suggests the claimed *key preform being self-bonded sufficiently as to permit green machining*. Instead, Vives discloses a connecting element having a fibrous texture that is subjected to compacting prior to engagement inside a corresponding lodging formed in at least one of said elements of said reinforcement texture in order to

conform to the shape of said lodging and lock thereinto by relaxation of said fibrous texture upon elimination of the compacting.” Vives, col. 2, lines 4-13. Seemingly, the Vives technique is limited, at least for the key component, to porous ceramic bodies that can be compressed, and which exhibit a “springback effect” upon removal of the compressive force. This compression/relaxation phenomenon may be inherent to the fibrous connecting element bodies of Vives, but applicants respectfully submit that many porous ceramic bodies that are useful as preforms to be infiltrated to form dense ceramics do not exhibit such springback. For instance, the preform that is exemplified in Example 4 of the present specification exhibits substantial rigidity, and essentially no springback. Accordingly, applicants prefer to shape relatively rigid preform bodies, such as by green machining, to closely fit the keyway, rather than to have a compressed body “puff up” to fill the keyway. Thus, the technique of the present invention should be of more general applicability than the Vives technique.

Further, the springback phenomenon of Vives means that the volume fraction of ceramic preform material in the region that is relaxing is going down. From Vives’ disclosure, it is clear that some regions of the key preform are relaxing more than others; thus, the loading of ceramic in Vives’ key preform varies with location. For certain applications, such as some of the semiconductor equipment applications referred to in the present application, uniform properties are of great importance, and varying preform loading does not generally contribute to uniform properties. See for example, the paragraph bridging pages 24 and 25 of the specification, which discloses that the preforms making up the two halves of the beam, as well as the preform bar whose cross section is the “key” have the same composition and same processing. One reason for doing this is to maintain uniformity of physical properties across the boundary from the preform key to the preform subunit.

As for the other applied reference, Lau neither discloses nor suggests a key preform. The preforms of Lau, however, might be rigid. To the extent that Lau does disclose rigid preforms, assuming arguendo that he does, Vives cannot make use of such a rigid preform as the key because Vives requires this preform to be compressible/expandable.

Accordingly, applicants respectfully request that this rejection be withdrawn.

Claims 21, 23-27 and 34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Vives in view of Lau, and further in view of U.S. Patent No. 5,079,195 to Chiang et al. (hereinafter referred to as “Chiang ‘195”). Applicants respectfully traverse this rejection.

Applicants respectfully submit that none of the applied references, whether taken alone or in permissible combination, discloses or suggests the claimed invention. In particular, none of the applied references discloses or suggests the claimed *reaction bonded silicon carbide (RBSC) key* of Independent claim 23 or Independent Claim 25. Applicants respectfully submit that the reaction bonding process densifies the preform by at least partially filling up pore space therein with in-situ silicon carbide and residual infiltrant (e.g., silicon metal or alloy). If the preform was not rigid prior to reaction bonding, it is certainly quite rigid following reaction bonding, and as such is not free to compress and

expand (relax). The claimed inventive process does not require this compression and expansion on the part of the key preform; the component pieces can be assembled and bonded either before or after densification by reaction bonding or other infiltration technique. Vives cannot use a densified key to lock subassemblies together; according to Vives, the subassemblies must be locked first with the compressible/expandable preform, which only then is densified. This could be because Vives himself suggests that the infiltration process renders the infiltrated bodies (e.g., preforms) rigid. See, for example, column 3, lines 13-17 and lines 41-44.) Thus, the claimed invention is distinct from the disclosure of Vives, and in fact, is shown to be more versatile.

Regarding Independent Claims 24 and 34, and Dependent Claim 21, applicants respectfully submit that Vives neither discloses nor suggests the claimed *key preform being sufficiently self-bonded as to permits its being green machined*, the significance of which was recited previously. Neither Lau nor Chiang '195 discloses or suggests a key preform. To the extent Lau or Chiang '195 discloses a rigid preform, assuming arguendo that they do, Vives cannot make use of such a rigid preform as the key because Vives requires this preform to be compressible/expandable.

Accordingly, applicants respectfully request that this rejection be withdrawn.

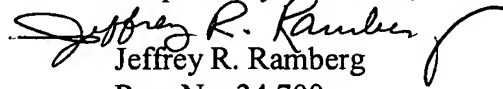
Claims 28 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Vives in view of Lau, and further in view of Chiang '195, and still further in view of U.S. Patent No. 5,509,555 to Chiang et al. (hereinafter referred to as "Chiang '555"). Applicants respectfully traverse this rejection.

Chiang '555 discloses a reaction bonded silicon carbide material in which the silicon infiltrant may be alloyed with aluminum metal. Even if Chiang '555 inherently discloses a preform that is sufficiently self-bonded as to permit its being green machined, the Vives reference cannot make use of this combination, because Vives requires the key preform to be compressible/expandable. Thus, Chiang '555 does not remedy the deficiencies of the other references. Accordingly, applicants respectfully request that this rejection be withdrawn.

In view of the above remarks and carefully amended claims, applicants respectfully submit that the present invention is in condition for allowance. Accordingly, applicants respectfully request issuance of a Notice of Allowance directed to claims 19-32 and 34-41.

Should the Examiner deem that any further action on the part of applicants would be desirable, the Examiner is invited to contact applicants' undersigned representative.

Respectfully submitted,


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